

Patent Claims

1. A device for casting a workpiece, in particular an internally cooled turbine blade or vane, having a casting cavity (1), in which there are casting cores (2) which produce passages (3) which pass through the workpiece, characterized in that the casting cores (2) are introduced into the casting cavity (1) in such a manner that they rest loosely against one another.
2. The device as claimed in claim 1, characterized in that at least two casting cores (2) rest against one another, producing a passage (3) which passes through the workpiece.
3. The device as claimed in one of claims 1 or 2, characterized in that the maximum external dimensions of the casting cores (2) are smaller than the minimum internal dimensions of the casting cavity (1).
4. The device as claimed in one of claims 1 to 3, characterized in that the casting cores (2) can be poured into the casting cavity (1).
5. The device as claimed in one of claims 1 to 4, characterized in that the casting cores (2) are approximately spherical and/or ellipsoidal.
6. The device as claimed in one of claims 1 to 5, characterized in that the casting cores (2) are of approximately equal sizes.
7. The device as claimed in one of claims 1 to 6, characterized in that diameters (5) of the casting cores (2) are between approximately 0.1 and approximately 2 mm.

8. The device as claimed in one of claims 1 to 7, characterized in that the casting cores (2) have hollows which can be filled with casting material.

9. The device as claimed in one of claims 1 to 8, characterized in that the hollow is a bore (19) which runs through a center (7) of the casting core (2).

5 10. The device as claimed in one of claims 1 to 9, characterized in that only a predetermined part of the workpiece casting mold (10) is filled with casting cores (2).

10 11. The device as claimed in one of claims 1 to 10, characterized in that the casting cores (2) are compacted using a vibratory device.

12. The device as claimed in one of claims 1 to 11,
15 characterized in that the casting cores (2) which have been introduced into the casting cavity (1) are held together.

13. The device as claimed in one of claims 1 to 12,
20 characterized in that the casting cores (2) are held together by meshes (8).

14. The device as claimed in one of claims 1 to 13,
characterized in that the casting cores (2) which have
25 been introduced into the casting cavity (1) can subsequently be coated with a material (9) which is able to withstand casting and bonds to them.

15. The device as claimed in one of claims 1 to 14,
30 characterized in that the casting mold (10) is connected to an evacuation device.

16. A process for casting a workpiece, in particular
an internally cooled turbine blade or vane, in which
35 casting cores (2) are introduced into a casting cavity (1), producing passages (3) which pass through the workpiece, in particular having the features

of one or more of claims 1 to 15, characterized in that the casting cores (2) are introduced into the casting cavity (1) in such a manner that they rest loosely against one another.

17. The process as claimed in claim 16, characterized in that the casting cores (2) which have been introduced into the casting cavity (1) are subsequently coated with a material which can withstand casting and
5 bonds to them.

18. A workpiece with passages which pass through the workpiece, in particular an internally cooled turbine blade or vane, in particular produced using the process
10 as claimed in one of claims 16 or 17 with the device as claimed in one of claims 1 to 15, characterized in that the passages (3) pass through the workpiece (20) in the form of a three-dimensional grid.

15 19. The workpiece as claimed in claim 18, characterized in that practically a quarter of the total area of a workpiece side is made up by the area of uniformly distributed passage openings (6).

20 20. The workpiece as claimed in claim 18 or 19, characterized in that the passage openings (6) have diameters (9) of between approximately 0.1 and approximately 2 mm.